CLAIMS

I claim:

1.   A capacitive discharge ignition system, comprising:

a magneto having a rotor;

a first capacitive discharge device electrically connected to the magneto and to an ignition coil of an internal combustion engine;

a second capacitive discharge device electrically connected to the first capacitive discharge device, and to the ignition coil;

a mechanical startup mechanism connected to the magneto and adapted to initiate rotation of the rotor; and

an energy storage device electrically connected to the second capacitive discharge device and to the magneto, wherein the energy storage device is adapted to provide energy to the ignition coil of the internal combustion engine.

2.   The capacitive discharge ignition system of claim 1, wherein the energy storage device comprises a battery.

3.   The capacitive discharge ignition system of claim 2, wherein the battery is rechargeable.

4.   The capacitive discharge ignition system of claim 3, wherein the battery is adapted to store at least a portion of energy generated by the magneto during rotation of the rotor.

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5.   The capacitive discharge ignition system of claim 1, further comprising:

means for selectively actuating the second capacitive discharge device.

6.   The capacitive discharge ignition system of claim 5, further comprising:

means for measuring properties of the engine during engine ignition, steady-state

combustion, and termination of combustion.

7.   The capacitive discharge ignition system of claim 4, wherein the means for

measuring properties comprises at least one engine-rotation sensor.

8.   The capacitive discharge ignition system of claim 5, wherein the means for

selectively actuating comprises a user-operable switch.

9.   The capacitive discharge ignition system of claim 1, wherein the mechanical

startup mechanism comprises an electric motor.

10.   The capacitive discharge ignition system of claim 1, wherein the mechanical

startup mechanism comprises a kick-start device.

11.   The capacitive discharge ignition system of claim 1, wherein the mechanical

startup mechanism comprises a pull-start device.

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12.   The capacitive discharge ignition system of claim 1, wherein the mechanical startup mechanism is adapted to be actuated by a bump-start process.

13.   A capacitive discharge ignition system, comprising:

a capacitive discharge device adapted to initiate combustion within an internal combustion engine;

an energy storage device electrically connected to the capacitive discharge device, wherein the capacitive discharge device is adapted to deliver energy from the energy storage device to the internal combustion engine; and

a control system for controlling storage and release of energy from the energy storage device and initiating combustion within the engine.

14.   The capacitive discharge ignition system of claim 13, further comprising:

a magneto connected to the capacitive discharge device.

15.   The capacitive discharge ignition system of claim 13, wherein the energy storage device comprises a battery.

16.   The capacitive discharge ignition system of claim 15, wherein the battery is rechargeable.

17.   The capacitive discharge ignition system of claim 14, wherein the battery is recharged by energy from the magneto.

18. The capacitive discharge ignition system of claim 13, wherein the control system is programmable.

19. A method for combustion re-initiation in an engine utilizing capacitive discharge ignition, comprising:

initiating combustion within the engine;

delivering at least a portion of energy from the engine to an energy storage device associated with a capacitive discharge device;

terminating combustion of the engine;

actuating the capacitive discharge device; and

delivering stored energy from the energy storage device through the capacitive discharge device to the engine thereby re-initiating combustion within the engine.

20. The method of claim 19, wherein the step of delivering stored energy is preceded by the step of initiating rotation of a rotor within a magneto connected to the engine.